



The State of Hubbard County Lakes and How to Protect Them

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Hubbard County Lakes

Presentation Outline

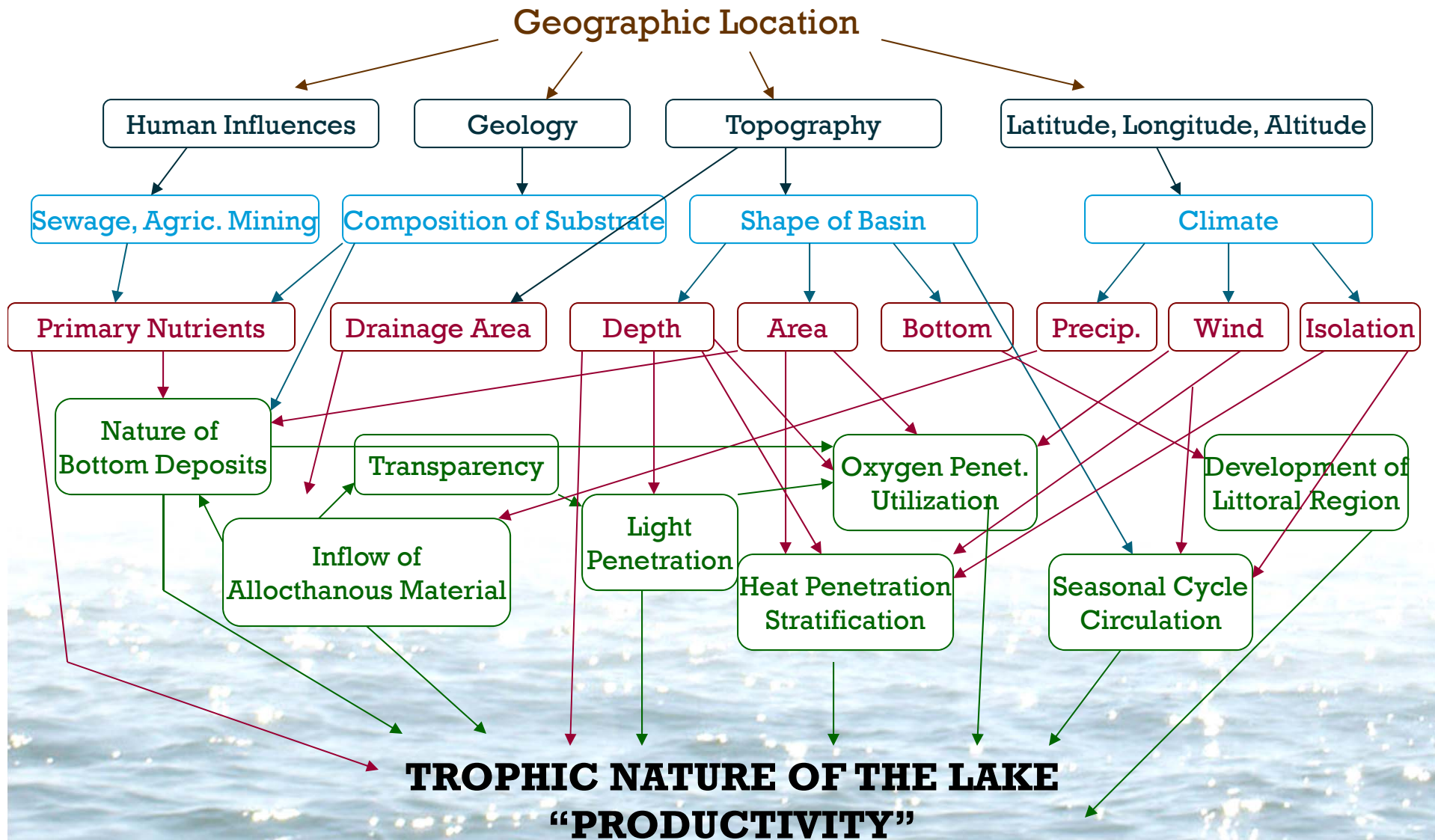
Part 1: State of Hubbard County Lakes

Part 2: Healthy Habitat = Healthy Lakes

Part 3: How to Protect the lakes



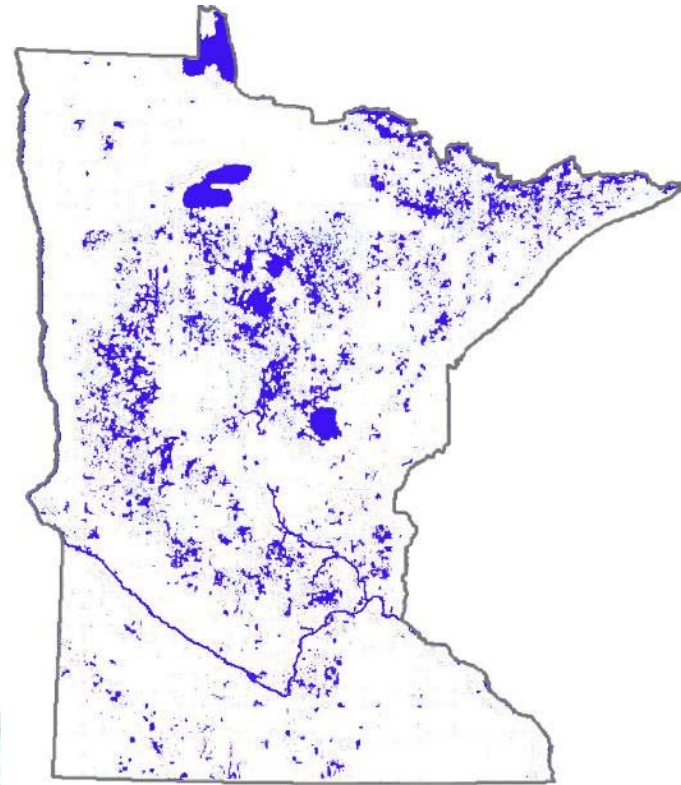
Each Lake is Different



MN Lake Formation



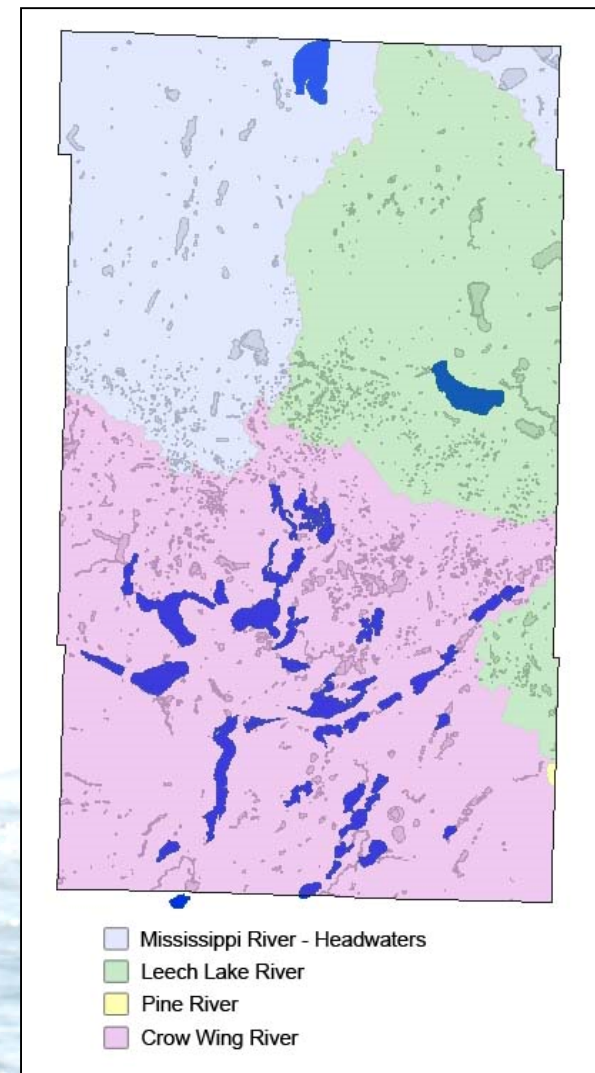
2 million years before present



present

Hubbard County Advantages

- Place in the watershed
- Headwaters of three major watersheds
 - Crow Wing Watershed
 - Leech Lake Watershed
 - Mississippi River Headwaters



Hubbard County Advantages

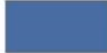




- **Geology/Soils/Landcover**
 - Sandy Soils
 - Low phosphorus

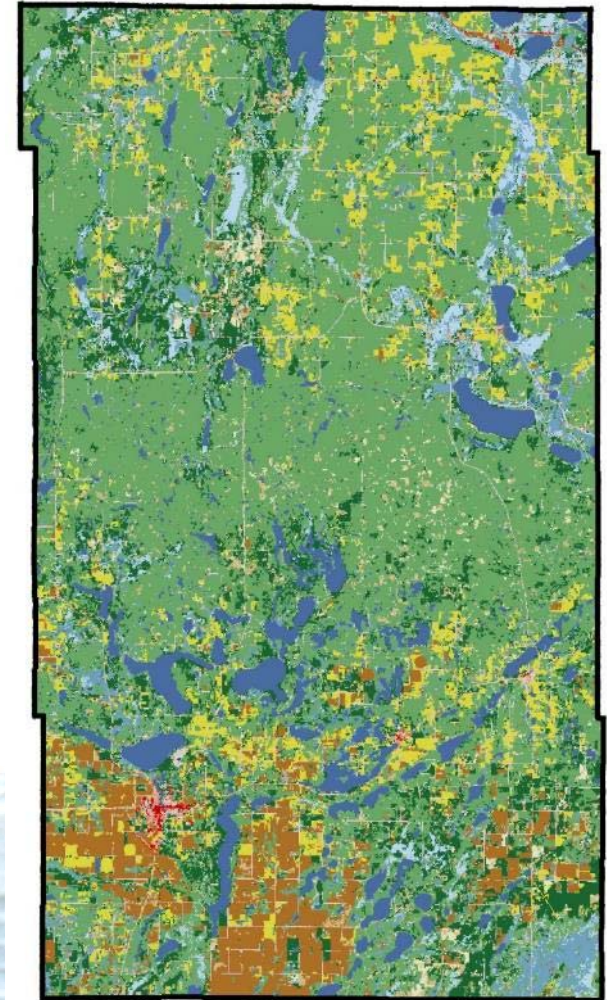


Hubbard County Advantages

- **Geology/Soils/Landcover**
 - Sandy Soils
 - Low phosphorus
 - Good forest cover

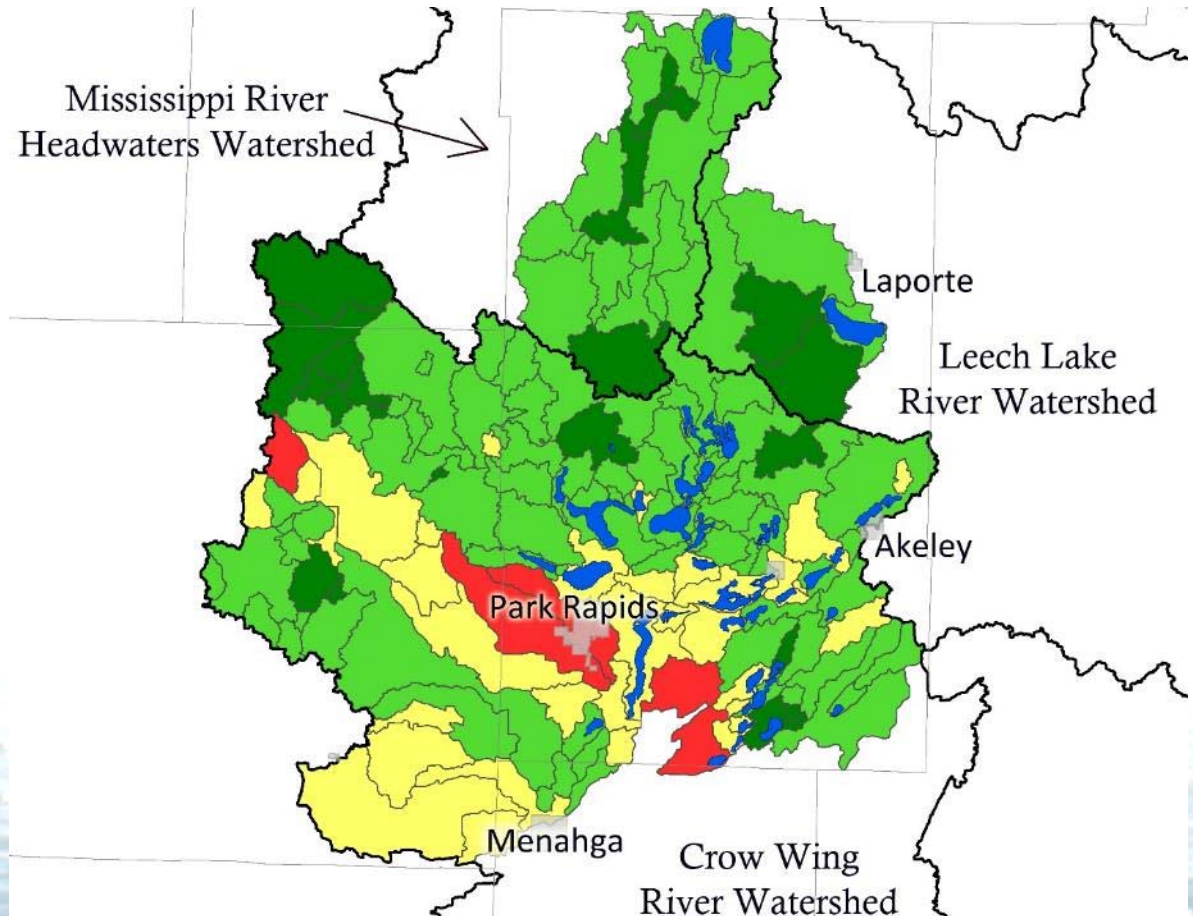
LEGEND

	Lake
	Forest
	Pasture/Hay
	Cultivated
	Wetland



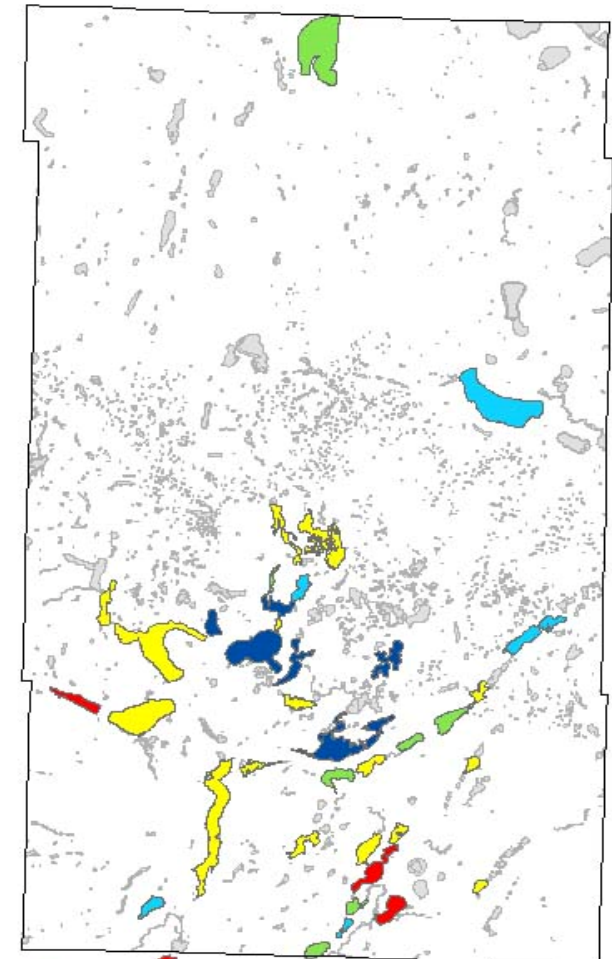
Hubbard County Advantages

- Good protection
- Low development



Hubbard County Advantages

- Most of the Hubbard County lakes fall into the oligotrophic and mesotrophic classifications
- The eutrophic lakes are mostly shallow lakes.



State of Area Lakes

- How are our lakes doing?
- The only way to answer that is by continued annual monitoring.



Why Monitor Lakes?

- Organizations monitor water quality because it provides a knowledge base that they can use to protect and restore their lake(s)
- Lakeshore property owners and all lake users can directly experience the fruits of their labor in protecting the lakes
- Healthy lakes support tourism in the area, boosting the local economy



Water Quality Trends through 2016

Lake	Years Monitored	Trends
Big Mantrap	1997-2017	No trends, stable
Big Sand	1998-2017	Improving TP & Secchi, 99%
Gilmore	1997-2017	Improving Secchi, 99%
Long	1997-2017	Improving TP and Secchi, 95%
Plantagenet	1999-2017	No trends, stable
Portage	1997-2017	Improving, all parameters, 99%
Lower Twin	1997-2017	No trends, stable
Spider	1997-2017	No trends, stable
Potato	1997-2017	Improving, CHLA, 99%

Improving Trends

- Lakes with improving Secchi depth trends
 - Emma
 - Eagle
 - Hinds
 - Kabekona
 - Little Sand
 - Stocking

Through 2011
Data



No Trends – Stable Water Quality

- 2nd Crow Wing
- 4th Crow Wing
- 5th Crow Wing
- 6th Crow Wing
- 7th Crow Wing
- 8th Crow Wing
- Bad Axe
- Belle Taine
- Blue
- Boulder
- Duck
- Fishhook
- Peysenske
- Portage
- South Island
- Stony
- Upper Bottle

Through 2011
Data

Declining Secchi Depth Trends

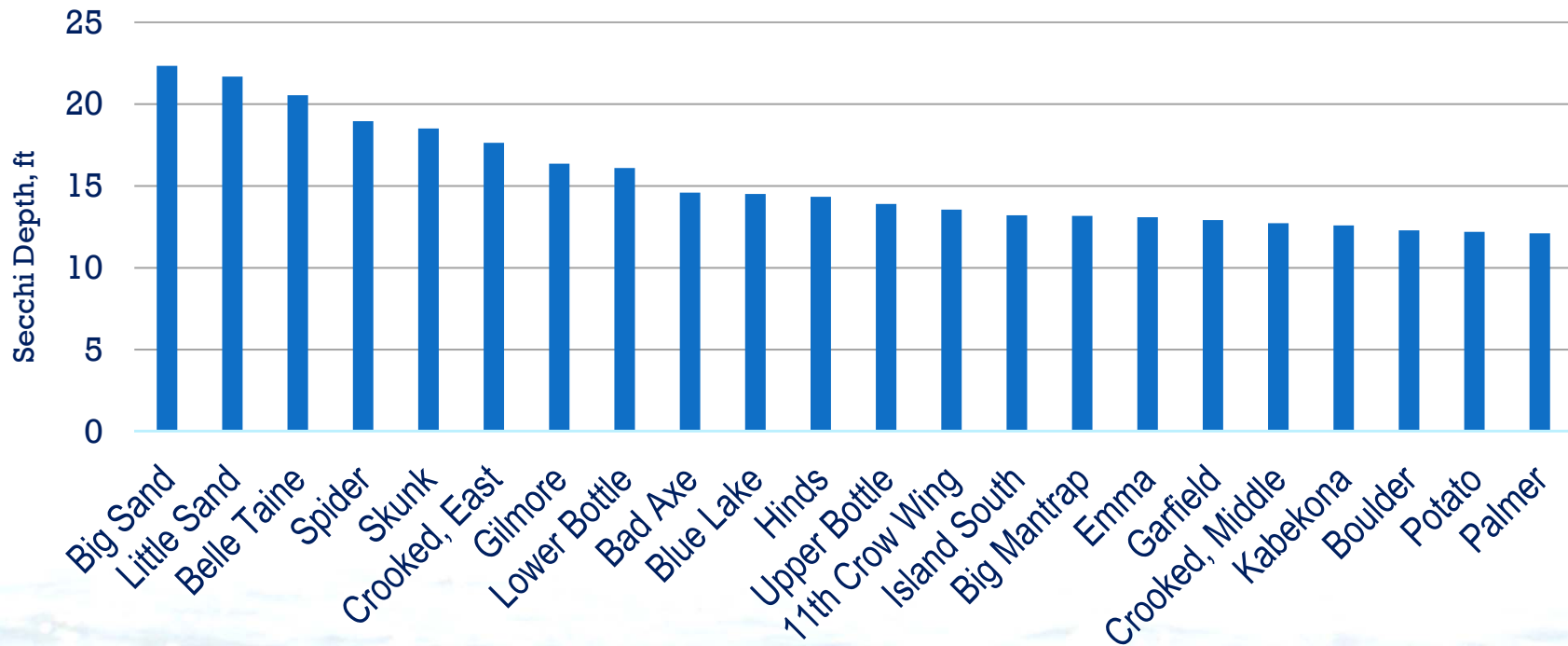
- 9th Crow Wing
- Lower Bottle
- Palmer

Through 2011
Data



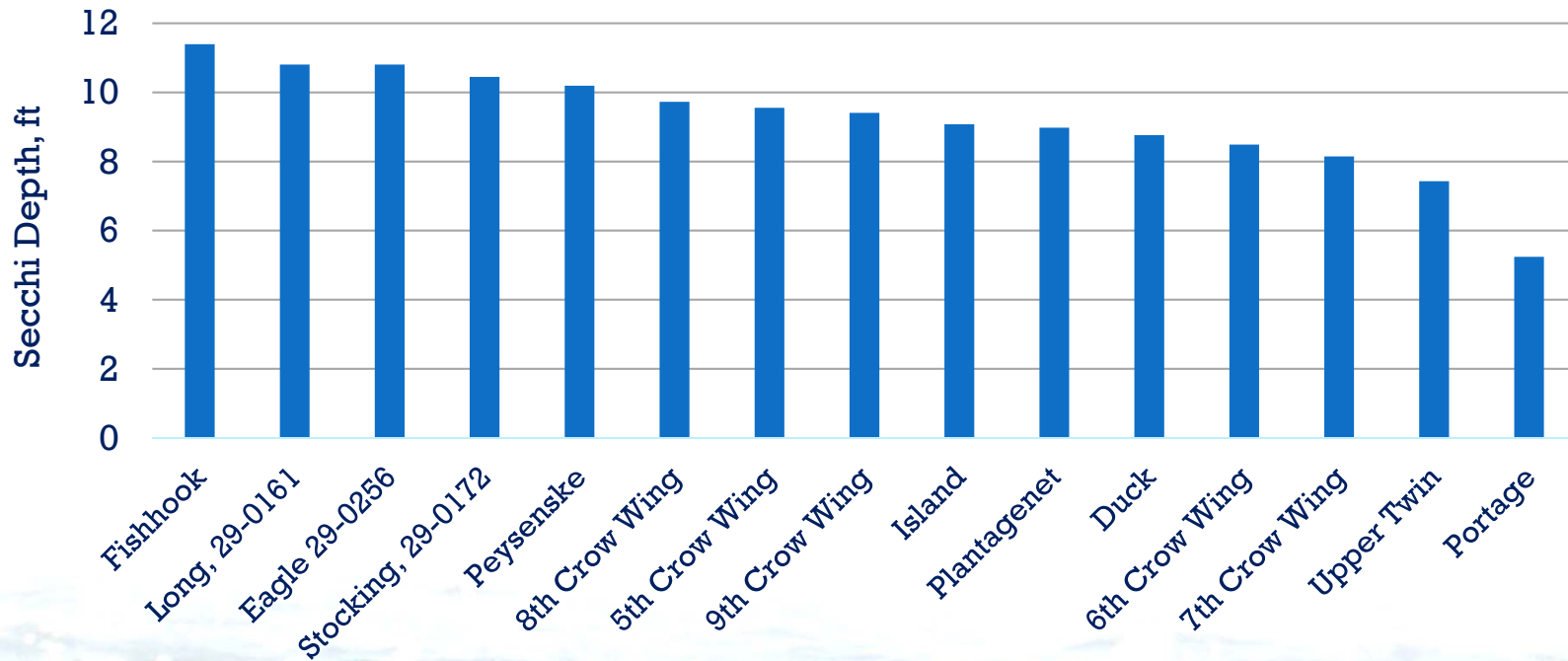
Historical Transparency

Average Historical Clarity through 2016



Historical Transparency

Average Historical Clarity through 2016





**Healthy Habitat
=
Healthy Lakes**

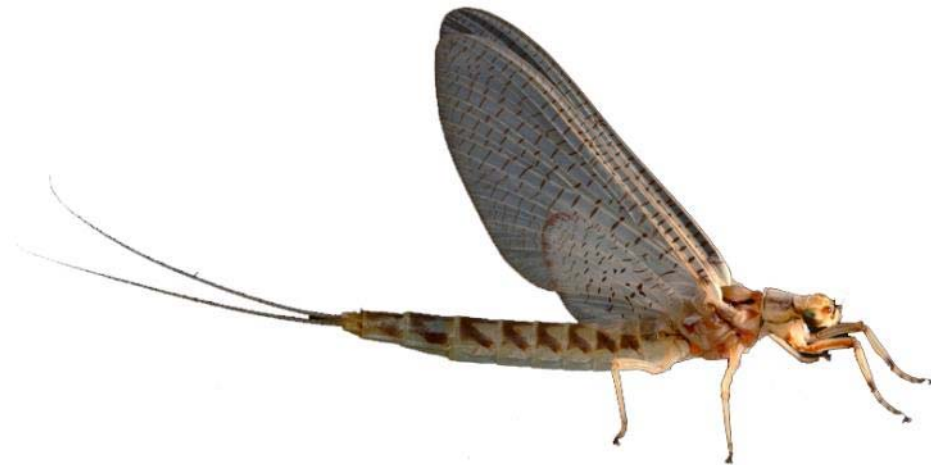


Clean Water Indicators



Hexagenia mayfly

These mayflies are filter feeders found in the soft silt or sand of streams and lakes. Because mayflies can't survive in water that lacks oxygen, they are good indicators of the amount of eutrophication (phosphorus).



Clean Water Indicators

Common Loon

Loons are diving birds that use their eyesight to capture their food.

They need:

- clear water
- healthy fish populations
- undisturbed shorelines or islands with plenty of natural vegetation for nesting
- tall shoreline vegetation for protection of their young
- they are easily disturbed by excessive boat traffic and wakes, and are displaced by human residential activity



Clean Water Indicators



Tullibee/Cisco

Important forage species for the lake's game fish. They need highly oxygenated water to live. When lakes lose their Tullibee populations, it can indicate increased Eutrophication. The loss of Tullibee then affects game fish populations because they are a major food source.





DNR Lakefinder

Home >

How to use LakeFinder

- LakeFinder search tips
- Find a lake by map
- Stocking reports user guide
- Go to mobile site

LakeFinder

Find a lake

Lake Name/ID:

AND/OR

County:

LakeFinder contains data for more than 4,500 lakes and rivers throughout Minnesota, including lake surveys, lake depth maps, lake water quality data, lake water clarity data, lake notes, and fish consumption advice.

Click on “fisheries lake survey” to see if your lake has cisco

Home > LakeFinder >

Lake Reports

- [Fisheries Lake Survey](#)
- [Water Access Sites](#)
- [Fish Stocking](#)
- [Fish Consumption](#)
- [Water Levels](#)
- [Water Quality](#)

Lake Maps

- [Water Clarity](#)
- [Lake Depth](#)
- [Recreation Compass](#)
- [Topographic](#)

Fish Minnesota

- [Fishing Regulations](#)
- [Buy a fishing license](#)
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Name: Minnewaska
ID: 61013000
County: Pope
Near: Long Beach
Border Water: No

Fish Species: black bullhead, black crappie, bluegill, brown bullhead, channel catfish, hybrid sunfish, largemouth bass, northern pike, pumpkinseed, smallmouth bass, tullibee (cisco), walleye, yellow bullhead, yellow perch, bigmouth buffalo, bowfin (dogfish), common carp, freshwater drum, white sucker

Fishing Regulations:

- [General](#)
- [Inland Waters](#)

Invasive species: zebra mussel, Eurasian watermilfoil

[Stop aquatic hitchhikers](#)



DNR Cisco Refuge Lakes

29-0025-00	Ninth Crow Wing
29-0036-00	Eleventh Crow Wing
29-0048-00	Benedict
29-0075-00	Kabekona
29-0101-01	East Crooked
29-0161-00	Long
29-0184-00	Blue
29-0185-00	Big Sand
29-0239-00	Spearhead
29-0309-00	LaSalle

Clean Water Indicators



Freshwater Mussels

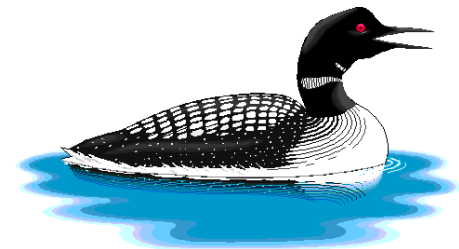
Mussels filter oxygen and particles from the water, cleansing the water in the process and absorbing what they consume into their bodies and shells. It is for these reasons that mussels are sensitive to changes in their environment and serve as indicators of the health of our lakes and streams.

Degradation of our lakes and rivers from runoff of silt and chemicals as well as physical changes from damming, channelization, and dredging, have taken their toll on native mussels in North America.



Healthy Habitat

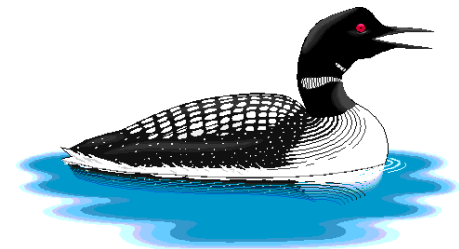
- Fish, birds and other aquatic organisms need a healthy habitat to survive
- To maintain a healthy lake ecosystem, this habitat needs to be preserved





Healthy Habitat

- If these clean water indicator species disappear from your lake, that could indicate a water quality problem.





Healthy Habitat

- Decreases in water quality and the loss of habitat and spawning sites for game species are often the primary mechanisms that create opportunities for “less popular” fish species (carp) and AIS



- The best way to avoid this is to protect habitat where game fish spawn and rear their young
- Also, to protect fish and bird food sources such as invertebrates and aquatic plants



Healthy Habitat

- Protect aquatic plants





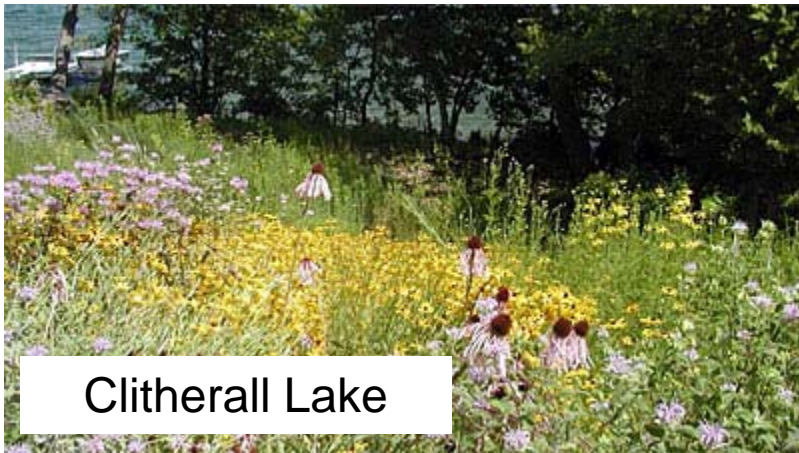
Healthy Habitat

- Removing aquatic vegetation eliminates shoreline stabilizing plants and habitat for:
 - Bass and other fish that hide among plants and spawn there
 - Loons that nest in floating vegetation
 - Waterfowl that feed on underwater plants
 - Insects that live among underwater plants
- Sand trucked in for swimming beaches covers underwater gravel or silt used by:
 - Fish for spawning
 - Mayflies for burrows
 - Frogs for laying eggs



What can we do?

- Naturalize your shoreline
 - Plant natural vegetation along the shoreline instead of a mowed lawn
 - Don't dispose of yard waste in the lake or stream



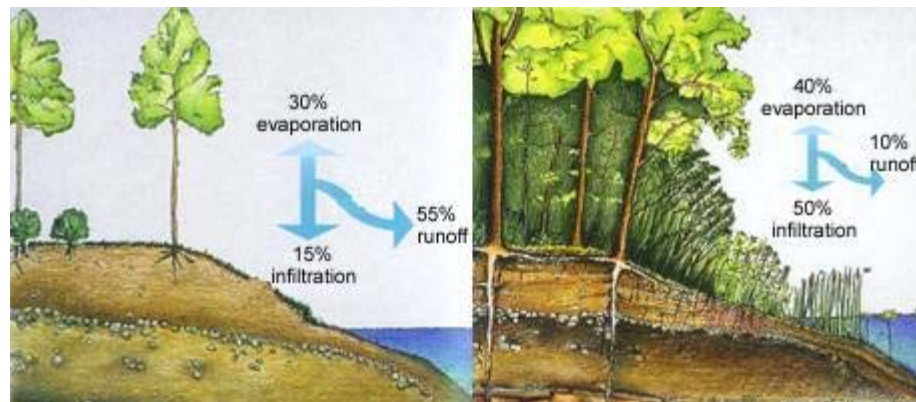
Clitherall Lake



Winona Lake

Why is it necessary?

- Encourage or restore the native vegetation along your shoreline to further **slow runoff and filter nutrients** that might otherwise reach your lake
- The benefits of a shoreline buffer strip also include **improving habitat**, increasing privacy, enhancing aesthetics, and deterring nuisance geese



Why is it necessary?

Phosphorus Inputs Runoff Volume



(adapted from Wisconsin DNR, photos from University of Wisconsin Extension)

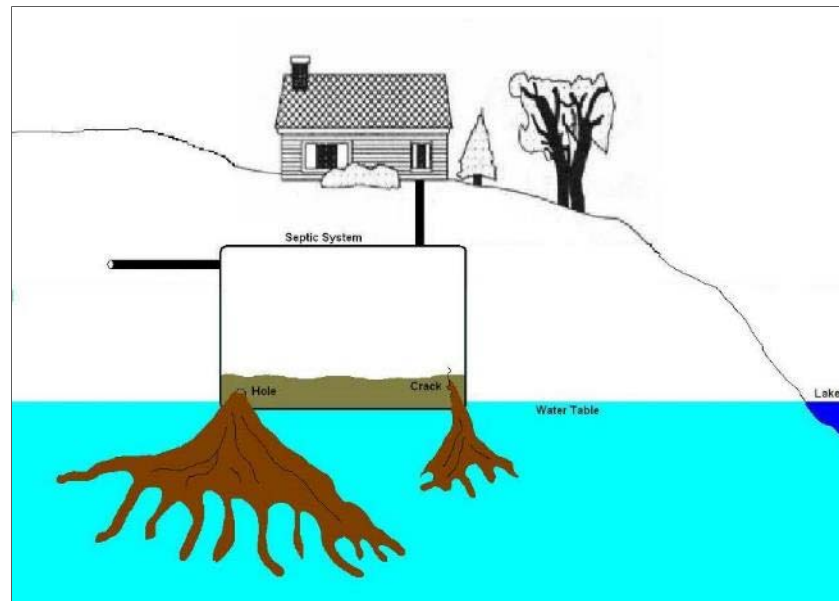
What can we do?

- Minimize increasing impervious surface
 - Impervious surface includes roofs, patios, sidewalks
 - Impervious areas don't allow rain water to soak into the ground, which contributes to runoff
 - Plant natural vegetation instead of rock walls
 - Build a deck rather than a patio



What can we do?

- Take good care of septic systems and their drainfields, failing systems can add nutrients and bacteria to the lake
- A septic system should be pumped at least every 3 years



What can we do?

- Ground-truthing in your immediate lakeshed
 - Look for lakeshore erosion
 - Look upstream of your inlets
 - Where does stormwater go near your lake?
 - Do you have a major highway by your lake that uses road salts in the winter?

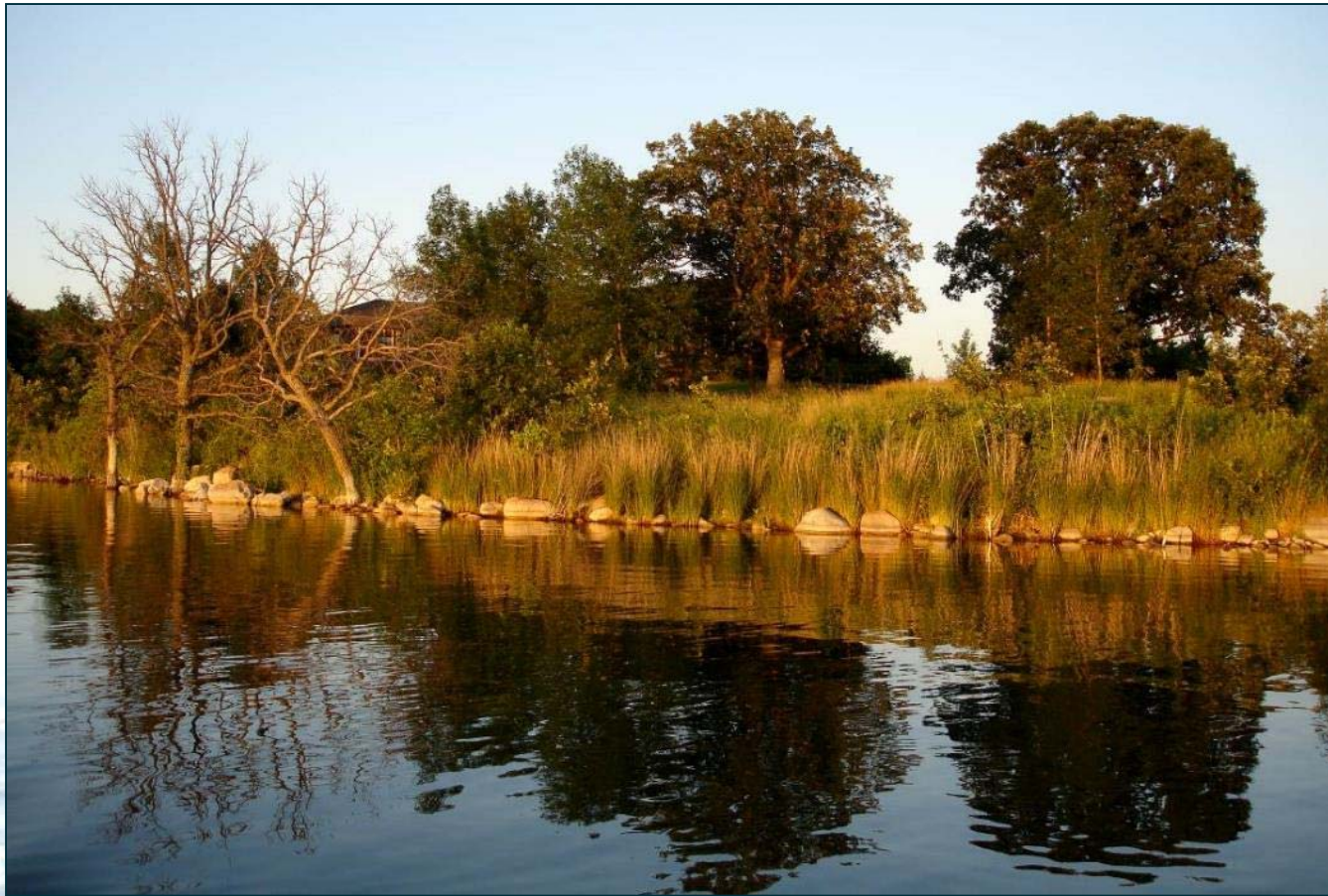


Stewardship

- Stewardship is an attitude.
- It is the understanding that what we do on land and in the water affects the lake.
- It is recognition that lakes are vulnerable and that in order to make them thrive, citizens, both individually and collectively, must assume responsibility for their care.



Questions?





Water Quality Myths

- “Septic Systems are bad”
 - When your septic system is properly designed, installed, operated and maintained it will provide economical and effective sewage treatment.
- “Leeches are bad”
 - There are actually a wide variety of leeches that live in the lake, and most of them do not suck your blood or indicate poor water quality.





Water Quality Myths

- “Swimmers Itch indicates poor water quality”
 - The presence of swimmers itch means you have the right kind of snail and the right kind of birds in your lake. We get caught in the middle when the parasite leaves the snails and enters our skin instead of the birds. Some common bird hosts include common mergansers, mallards, swans, and red-winged blackbirds.
- “It’s okay to use shampoo and soap in the lake”
 - Shampoo and soap can harm good aquatic insects. The shampoo and soap form a film on top of the water. This film causes the surface tension to break, and insects that walk on water fall in and drown.

